

# **CERTIFIED MILL TEST REPORT**

Altoo Steel Test Lab Anno suverrescent AS Cul Streat Allow II GADUS 9011 GAB 463-4490 Est Atla ión0:463-4491-446

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Anna 1949, Co.				<b>e</b> :															
Date		11/	25/2019		stomer P				р	0079851	Spec	ification	S		********	***********	****************		******
SI Ord			102225		stomer P	r			R70	1000624									
SI Ord	Líne No		1									Grade 80							
	scription	d, 10000, 5	2'0"										Strand	Cast, RR -	62 39:1				*****
eat #						*****		****			Yield P5	а 1 т	ensile PSI	% Elong	aation	% E	ROA	Por	d Test
90664		• • • • • • •	* * * * *	* * * * *		* * * *	* * * * * * *	******		* * * * * * *	83900		119600	CASE CONTRACTOR OF CONTRACT			2		
				* * * * *						THODS	ASTM	5.415	& E-1019			* • • •	****	* * * * *	* * * *
eat #	c	Mn	р	S	Si	Cu	NI	Cr	Mo	Sn	Al	Nb/Ch		В	ті	N	1	Pb	Ca
90664	0.24	1.53	0.013	0.033	0.25	0.33	0.089	0.145	0.027	0.009	0.004	0.003	0.150	0.0005	0.0009	0.01	128 0.	0062	0.001
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eat #	GS	DI 2.10																	
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		ASTI	n c:-40 P	vietnou .	M		ASTM E-4	is ivietnod C	SAE	J422	ASTM E	:-381	Cha	ру		Hard	Iness		CE
eat #	TA	тв тс	TD	HA H	HB HC	HD	S	0	S	0	S R	С			RC	RB	BHN	BHN2	
90664									***************************************	*****	******	******	*****	*****			228		******
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						****			IONAL	CONTIN	:115	*****		*****					
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o In fr o S c th N	or deliberati epairs were urnace mel origination. ubscribed i ounty of M nis Ay commiss	ely added in performed ted and roll and sworn 1 adison, Sta	n the pr l on this led in th to befor te of Illi Day of	re me, a nois	n of this s al This ste Material Notary Pu	teel. No el is 10 qualifie iblic, in	o welding o 00% electric es as NAFTA and for the	r weld arc A	******	Altera allowo Alton I here in the Quali	tion or reg ed without Steel Inco by certify I records o ty Leader:	written iporated that the a f ALTON Josh Le	approval by above tests a STEEL INCO evi	a represen	tative of as contai				
o In S C th M	or deliberati epairs were urnace mel origination. ubscribed i ounty of M nis Ay commiss	ely added in performed ted and roll and sworn 1 adison, Sta	n the pr l on this led in th to befor te of Illi Day of	re me, a nois	n of this s al This ste Material Notary Pu	teel. No el is 10 qualifie iblic, in	o welding o 00% electric es as NAFTA and for the	r weld arc A	******	Altera allowo Alton I here in the Quali	tion or reg ed without Steel Inco by certify I records o ty Leader:	written iporated that the a f ALTON Josh Le	approval by above tests a STEEL INCO evi	a represen	tative of as contai				



# **CERTIFIED MILL TEST REPORT**

Alton Steel Test Lab #5 Cut Street Alton, IL. 62002-9011 (618) 463-4490 EXT 2486 (618) 463-4491 (Fax)

BILL TO	SILL TO																
Date ASI Ord No. ASI Ord Line Item	03/06, {	14000	Customer PC Customer PT		R701375	076- 600	498		Specifica SAE 13 Grade	5V24				90000000000000000000000000000000000000	100-0000000000000000000000000000000000	9	
Item Description Steel Bar, Hot Roller	), 1.3750, 5	:0°0 "	500.000 · · · · · · · · · · · · · · · · ·	and an a state of the second										ne on de la company de la c	Stran	d Cast, RR	= 33.00:1
Heat Number 166426					СНЕМІ	CAL ANA	LYSIS TE	ST METH	Yield PSI 86100 ODS ASTM		Tensile 125700 E-1019	PSI	% Elong 16 in 2		% ROA 34	Bend	
Heat Number	С	Mn	р	S	Si	Cu	NI	Cr	Мо	Sn	AI	Nb/Cb	v	в	Ti	N	Ca
166426	0.23	1.53	0.015	0.028	0.25	0.23	0.074	0.157	0.027	0.010	0.003	0.005	0.152	0.0006	0.0009	0.0091	0.0001
		A		JOMINY	HARDEN	L ABILITY	USING A	STM A-25	5 CALCUI	ATED FR	OM CHEN	I IICAL DI	L	1	-	1	
Heat Number 166426	<u>GS</u> 8	DI 2.01					SPECIA	I. TEST R	ESULTS							900 900 900 900 900 900 900 900 900 900	****
			ASTM E-45 I	Method A:	****************	******	ASTM E	-45 Method	C:	SAE J422	ASTM	1 E-381	Ch	arpy	Hai	dness	1
Heat Number	TA	1'B T	מיד סי	HA I	нв но	: HD	Ś	0		s o	S	R C	9076668866689999999999999999999999999999	nin 1888 hasasann regear, as	RC	RB 8HN	
166426										<b>6</b>	en marine a Addenie					240	
*******	******	******			**********	**********	ADDITIC	DNAL COM	MENTS		++++++++++++++++++++++++++++++++++++++			*****		e-101370000000000000000000000000000000000	and the second state of th
No mercury, lead, radiu equipment is used or de steel. No weld or weld This Steel is 100% Elect U.S.A. Material qualifier	eliberately ad repairs were tric Arc Furna	ded in the performence ice Melted	production of d on this mate and Rolled in	erial.	aren marin diki suuraanan	008945-00-540-540-540-540-540-540-540-540-54	*****	Alto	ration or rep wed without n Steel Incor reby certify I	written app porated.	proval by a r	epresentative	e of		1999		**************************************
Subscribed and sworn t the county of Madison,	State of Illino	bls			na faantaase dhalana ayaa ayaa	****	*******	in th	ne records of ality Leader	ALTON ST	EEL INCORP	ORATED					
this								<b>B</b> ossifica		erentete frankrika ander	feix				*****	*****	
(Notary Public)	ff ga ann ta ff ga ann an d		999000 M. M. Harrison Karana Kara					i	0	0	1	**************************************	84,000 ¥ = 0,000 angeograph			a beind filme an engligt ter som	angdal (948), 484 (954)



# **CERTIFIED MILL TEST REPORT**

Alton Steel Test Lab #5 Cut Street Alton, IL. 62002-9011 (618) 463-4490 EXT 2486 (618) 463-4491 (Fax)

BILL TO							5	бНІР ТО									
									40 <sup>1</sup>								
Date ASI Ord No. ASI Ord Line Item	1	75972	ustomer PO ustomer PT		R7013756	500	*****		Specifica SAE 1 Grade	5V24	******		******				
Item Description			***********	*****											Stranc	Cast, RR	=33.00:1
Steel Bar, Hot Rolle Heat Number 155404	:d, 1.3750, 5	<u></u>		· · · · · · · · · · · · · · · · · · ·	CHEMT	CAL ANIA		5т метно	Yield PS 88200	· · · · · · · · · ·	Tensile 123400	2 PSI	% Elong 15 in 2		% ROA 27	Bend	
Heat Number	С	Mn	р	s	Si	Cu	Ni Ni		Mo	Sn	AI	Nb/Cb	l v	в	Tn	N	Са
155404	0.26	1.54	0.014	0.025	0.24	0.27	0.075	0.121	0.023	0.011	0.004	0.004	0.154	0.0003	0.0007	0.0112	0.0016
***************************************			L	JOMINY	' HARDEN	ABILITY	USING A		5 CALCU	LATED FI		MICAL DI	]		1		
Heat Number 155404	GS 8	DI 2.10				*****	SPECIA	L TEST R	ESULTS			*******	*****				
			ASTM E-45	Method A:			ASTM I	-45 Method	I C:	SAE J422	AST	M E-381	Cł	агру	Hai	dness	]
Heat Number	TA	тв т	C TD	НА	нв нс	: HD	S	O		s c	) S	R C		********	RC	RB BHN	
155404				~~~~~					A							240	
#*****							ADDITI	DNAL CO	MMENTS	*****						****	*****
No mercury, lead, rad equipment is used or steel. No weld or wel This Steel is 100% Ele	deliberately a d repairs were ectric Arc Furn	dded in the e performed ace Melted	production on this main and Rolled in	erial.				allo Alto	wed withou on Steel Inco	t written ap prporated.	proval by a	t, except in f	e of				
U.S.A. Material qualif Subscribed and sworr the county of Madisor	n to before me n, State of Illir	e, a Notary nois	Public, In an					in ti		of Alton 5	TEEL INCOR	e correct as o	contained				
this	Day of							B-GODA	*	-1 col	few						
(Notary Public)									0	0	n –						

NUCOR CORPORATION

NUCOR STEEL SOUTH CAROLINA

## **Mill Certification** 4/8/2020

300 Steel Mill Road DARLINGTON, SC 29540 (843) 393-5841 Fax: (843) 395-8701

Sold To:

Ship To:

Customer P.O.	PO078234	Sales Order	293716.2
Product Group	Merchant Bar Quality	Part Number	30001375600DFF0
Grade	A572-70 - ASTM A572-00	Lot #	DL1810608701
Size	1-3/8" (1.3750) Round	Heat #	DL18106087
Product	1-3/8" (1.3750) Round 50' A572-70	B.L. Number	C1-766868
Description	A572-70 - ASTM A572-00	Load Number	C1-447861
Customer Spec		Customer Part #	R701375600
I hereby certify that the materia	al described herein has been manufactured in accordance with the specifications and standards listed abo	ove and that it satisfies those r	equirements.

Roll Date: 10/7/2018 Melt Date: 11/30/2018 Qty Shipped LBS: 48,506 Qty Shipped Pcs: 192

### Melt Date: 11/30/2018

C 0.23%	Mn 1.12%	V 0.0730%	Si 0.17%	S 0.02%	P 0.01%	Cu 0.07%	Cr 0.23%	Ni 0.04%	Mo 0.008%	Cb 0.003%
Roll Date: 1	0/7/2018									
Yield 1: 70,0	00psi			Tensile	1: 93,000psi			Elc	ngation: 18%	in 8"(% in 203.3mm)
Yield 2: 70,0	00psi			Tensile	2: 94,000psi			Elc	ngation 18%	in 8"(% in 203.3mm)

Specification Comments:

Comments: MAT'L ALSO MEETS ASTM A572 GR 60

1. WELDING OR WELD REPAIR WAS NOT PERFORMED ON THIS MATERIAL 2. MELTED AND MANUFACTURED IN THE USA 3. MERCURY, RADIUM, OR ALPHA SOURCE MATERIALS IN ANY FORM HAVE NOT BEEN USED IN THE PRODUCTION OF THIS MATERIAL

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James H. Blew **Division Metallurgist** 

#### NUCOR CORPORATION NUCOR STEEL SOUTH CAROLINA

### **Mill Certification** 4/8/2020

Sold To:

Ship To:

Customer P.O.		Sales Order	
Product Group	Merchant Bar Quality	Part Number	30001375600DFF0
Grade	A572-70 - ASTM A572-00	Lot #	DL1810608701
Size	1-3/8" (1.3750) Round	I-leat #	DL18106087
Product	1-3/8" (1.3750) Round 50' A572-70	B.L. Number	C1-766868
Description	A572-70 - ASTM A572-00	Load Number	C1-447861
Customer Spec		Customer Part #	R701375600

Roll Date: 10/7/2018 Melt Date: 11/30/2018 Qty Shipped LBS: 48,506 Qty Shipped Pcs: 192

#### Melt Date: 11/30/2018

C 0.23%	Mn 1.12%	V 0.0730%	Si 0.17%	S 0.02%	P 0.01%	Cu 0.07%	Cr 0.23%	Ni 0.04%	Mo 0.008%	Cb 0.003%	
Roll Date: 10	/7/2018	****							-		
Yield 1: 70,00	)0psi			Tensilo	1: 93,000psi			Elo	ngation: 18%	in 8"(% in 203.3mr	n)
Yield 2: 70,00	00psi			Tensile	2: 94,000psi			Elo	ngation 18%	in 8"(% in 203.3mm	1)

Specification Comments:

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1. WELDING OR WELD REPAIR WAS NOT PERFORMED ON THIS MATERIAL 2. MELTED AND MANUFACTURED IN THE USA 3. MERCURY, RADIUM, OR ALPHA SOURCE MATERIALS IN ANY FORM HAVE NOT BEEN USED IN THE PRODUCTION OF THIS MATERIAL

q-	μ	Ren	
1	4		

James H. Blew **Division Metallurgist**  đ

Page 1 of 1

## **Mill Certification**

03/19/2021

MTR#: MTR#: Lot #:DL1810786401 300 STEEL MILL RD DARLINGTON, SC 29540 US 843 393-5841 Fax: 843 395-8701

Sold To:

#### Ship To:

Customer P.O							the second s	Sale	s Order #		
Product Group	Hot Roll -	Merchan	t Bar Qua	ality			**************************************		Product #	3010060	********
Grade	A572 Gr	70	and the second stress second						Lot #	DL1810786401	
Size	1.375"			an haire Wannan a shoon arenn	Anton	-ahahaha e-shellada a ka thateeshaa		1999 - Augusta C. 1999 - Augusta Augusta Aug	Heat#	DL18107864	
BOL#			······································						Load #		
Description	HR-MBQ	RD 1.375	5" A572 G	r 70 50' 0'	6001-10	000 lbs		Custon	ner Part #		
Production Date	12/15/201	8	**************************************	and down to be a second of the second se		We an an a strength and a strength a		Qty Shi	oped LBS	0	
Product Country Of Origin	United Sta	ates				Contract (A. Contract of Space Sciences		**************************************	ipped EA	1. M. & Martin Martin Martin (Martin California) and California and Califo	
Original Item Description		ann a na an tar Anna an Anna ann an Anna ann an Anna		and the second				Orig	inal Item Number		
hereby certify that the mater	ial described here	in has been m	nanufactured in	accordance w	ilh the specific	ations and sta	ndards listed a	bove and that		D shall learn anti-	*************
Melt Country of Orig	in : United S	States	*****************************	********		**************************************	*****			te: 12/14/2018	
Roll Country of Orig	in : United S	States	****							te: 12/15/2018	
C (%)	Mn (%)	P (%)	S (%)	Sí (%)	Ni (%)	Cr (%)	Mo (%)	Cu (%)	V (%)	Nb (%)	1999 - Barrison Barrison, 1999 - Barrison Barrison, 1999 - Barrison Barrison, 1999 - Barrison Barrison, 1999 - Ba
0.22	1.20	0.000	0.020	0.260	0.06	0.12	0.02	0.26	0.090	0.005	
Tensile testing											
E	longation in 8" (%)	Tensile	e (PSI)	Yield (P	SI)						
(1)	17.0	96	000	70000	E.						
(2)	17.0	96	000	70000							

Comments: inc. = Incomplete

Welding or weld repair was not performed on this material.
Melted and Manufactured in the U.S.A
Mercury, radium, or alpha source materials in any form have not been used in the production of this material.

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Page 1 of 1

# **Mill Certification**

03/19/2021

MTR#: Lot #:DL1810786401 300 STEEL MILL RD DARLINGTON, SC 29540 US 843 393-5841 Fax: 843 395-8701

Sold To:

Ship To:

Customer P.O					*****	~~~~~~		Sale	s Order #		
Product Group	Hot Roll -	Merchan	t Bar Qua	lity					Product #	3010060	
Grade	A572 Gr 7	70							Lot #	DL181078640	)1
Size	1.375"			*****	***************************************				Heat #	DL18107864	
BOL#				***********	******			Load #		****	
Description	HR-MBQ	RD 1.375	" A572 G	r 70 50' 0'	6001-10	000 lbs		Custom	ner Part #		************
Production Date	12/15/201	8			*******			Qty Ship	ped LBS	0	
Product Country Of Origin	United Sta	ates		***************************************				Qty Sh	ipped EA	****	
Original Item Description								Orig	inal Item Number	****	
hereby certify that the materia	al described here	in has been m	anufactured in	accordance w	with the specific	ations and sta	ndards listed i	above and that i	l satisfies thos	e requirements.	***************************************
Melt Country of Orig										te: 12/14/2018	
Roll Country of Origi	n : United S	States				~~~~~				te: 12/15/2018	
C (%)	Mn (%)	P (%)	S (%)	Si (%)	Ni (%)	Cr (%)	Mo (%)	Cu (%)	V (%)	Nb (%)	
0.22	1.20	0.000	0.020	0.260	0.06	0.12	0.02	0.26	0.090	0.005	
<u><b>Fensile testing</b></u>											
E	ongation in	Tensile	e (PSI)	Yield (PS	31)						

	Elongation in 8" (%)	Tensile (PSI)	Yield (PSI
(1)	17.0	96000	70000
(2)	17.0	96000	70000

Comments: inc. = incomplete

Welding or weld repair was not performed on this material.
Melted and Manufactured in the U.S.A
Mercury, radium, or alpha source materials in any form have not been used in the production of this material.

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Page 1 of 1

Mark Schmidt, Chief Metallurgist